

REMARKS

This Amendment is submitted as placing the Application in condition for allowance, and could not have been filed before since the Examiner's position was not clearly known before.

The present Amendment significantly reduces the number of claims to expedite the prosecution to immediate allowance.

There is but one issue in this case, and no new issue is raised by the subject Amendment.

The issue is the meaning of Applicant's prior published Application WO97/14980* which states on page 3, line 17-25:

"The means for generating the seismic signals--but preferably it should be a magnetostrictive or piezoelectric transducer whose signal is controllable electrically."

*The Office Action does not identify the reference; however, prior prosecution appears to indicate that this is the reference being relied upon.

This recitation has nothing to do with controlling the direction of the seismic signal per Applicant's new invention as described and positively claimed in this Application.

Aside from the clear language that the seismic source is controlled; i.e., strength and frequency, not the direction of the signal, reference to page 5 of the reference further clarifies the meaning of these lines.

First, lines 3-4 teach that the seismic signal "propagates through the holes in cylindrical chambers via the drilling fluid". This is clearly illustrated in Figs. 1 and 2 where the fixed holes are shown and the outgoing signal is shown as propagating purely radially through the holes. There is not, and cannot be any adjusting or controlling of the outgoing seismic signal in such a structure. The direction of the signal is confined by the holes.

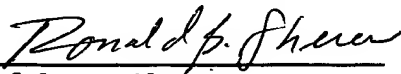
Moreover, the same clear statement is made on page 7, lines 3-4 which state, again, that the seismic signal "propagates through the holes". There can be no adjustment, or variation or control of the direction of the signal. It is fixed and limited to pass through the holes. That is the sole purpose of the fixed holes.

If any further clarification of the operation of Applicant's prior device is required, page 2 makes it clear that prior devices radiated in substantially one direction, whereas the invention in that prior case was to enable propagation "substantially radially in all directions". (Page 2, line 24) Propagation in "all" directions is directly contrary to any controlled or adjusted direction. It means radially in the fixed horizontal direction as determined by the fixed holes.

In addition to the foregoing, which makes the meaning of the word "controllable" absolutely clear, the Office Action does not address the additional, positive recitations in the dependent claims. For example, Claim 27 recites "direction of the seismic signal is varied in three dimensions azimuthly". Claim 28 recites "the seismic shock is rotated radially". Other Claims (33-34, 36-37) recite "two seismic sources", and "wave interference". None of these positive recitations are taught or suggested in the prior art. Why? Because no one, including Applicant, ever invented the adjustment or control of the direction of the outgoing signal and the substantial improvement in bore hole logging produced the present invention.

Lastly, Counsel had hoped to have an Interview with the Examiner prior to filing this Amendment, but such was not possible. Counsel plans to telephone the Examiner shortly to arrange a telephone or personal Interview prior to the Examiner's Action on this Amendment.

Respectfully submitted,


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